EXTENSION NOTE

forest sciences
NELSON FOREST REGION

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More Accurate Biogeoclimatic Maps for the Arrow and Columbia Forest Districts in the Nelson Forest Region, British Columbia

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- **New 1:50 000 maps of the Arrow and Columbia Forest Districts are significantly more accurate than the previous 1:250 000 maps.**
- **The new maps show that biogeoclimatic classification of 29% of the Arrow and Columbia Forest Districts has changed, which has significant implications for forest management and planning.**

NEW BIOGEOCLIMATIC MAPS OF ARROW AND COLUMBIA FOREST DISTRICTS

Digital maps of biogeoclimatic subzones and variants, accurate to 1:50 000 scale, are now available for the Arrow and Columbia Forest Districts, which are located in the Nelson Forest Region in southeastern British Columbia (BC). This dramatic increase in accuracy over the previous 1:250 000 scale mapping has revealed significant changes. Over both Districts, biogeoclimatic classification (Braumandl and Curran 1992) of 29% of the area has changed (30% of Arrow, 28% of Columbia).

A few highlights of the changes:

- Four biogeoclimatic subzones/variants that were previously not mapped in the Districts have been identified (ICHvk1, ESSFdc1, ESSFvc in Arrow; ESSFmm1 in Columbia).
- The combined area of Engelmann Spruce—Subalpine Fir (ESSF) parkland and Alpine Tundra (AT) has been reduced by over 210 000 ha, or 24%.
- The area of the ESSFwc2 has increased by 128 000 ha, or 173%.
- ESSF and AT parkland variants have been mapped separately.

Increased accuracy of these maps will benefit all users, from timber supply analysts to people preparing Silviculture Prescriptions.

MAPPING METHODS

A large proportion of the roads that cross existing map boundaries were travelled. Helicopter flights were used to check high-elevation boundaries and inaccessible areas. Aerial photographs were examined for patterns of parkland and AT vegetation. Colour-themed, forest-cover maps of diagnostic tree species were examined. The observations from these various data sources were used to develop elevation and aspect rules, and to note boundaries not associated with the elevation rules. The elevation/aspect rules and hand-drawn boundaries were combined to create a digital map product at 1:50 000 scale.

CHANGES

The biogeoclimatic classification of 29% of the area (or 893 000 ha) of the two Districts has changed; almost a quarter of that is associated with a redefinition of the ESSF parkland boundary. This has resulted in this boundary moving upwards about 150 m in elevation.

Other significant changes:

- ESSFwc2 has increased by 128 000 ha, or 173%.
- ICHvk1 has increased by 61 000 ha, or 62%.
- ICHmw2 has decreased by 60 000 ha, or 11%.
- ICHdw has increased by 39 000 ha, or 16%.
- AT and ESSF parkland, and ESSFwc1 and ESSFwc4, are being mapped separately.
- Natural Disturbance Type (NDT)[1] changed on 424 000 ha, or 13% of the total area. (7% of Arrow changed NDT, 18% of Columbia changed NDT.)

IMPLICATIONS OF THE NEW MAPS

The implications of more accurate mapping are far ranging. Much of BC's forest management is based on the Biogeoclimatic Ecosystem Clas-

1 NDT = groupings of variants for calculation of seral stage targets according to the *Forest Practices Code of British Columbia, Biodiversity Guidebook* (1995).

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sification (BEC) framework (MacKinnon et al 1992). BEC is the basis for determining, among other things, seral stage targets, tree species selection, silvicultural treatments, seed transfer rules, root disease hazard ratings, soil sensitivity, and site index.

Timber availability can be affected significantly by changes in NDT because such changes affect target levels of old-growth forest reserves. The 13% figure for change of NDT, for the two Districts combined, may be much greater for a given landscape unit (the scale at which these targets apply). This in turn can have a dramatic effect on short-term timber supply.

More areas of the province are slated for site series mapping (Terrestrial Ecosystem Mapping (TEM) or Predictive Ecosystem Mapping (PEM)) at scales of 1:20 000 or 1:50 000. Having accurate 1:50 000 BEC maps significantly increases the speed and accuracy of TEM and PEM. Site series mapping is a powerful tool used for site index adjustment, wildlife habitat assessment, and forest management planning. Because site index is an input to growth and yield models, changes in BEC mapping can affect allowable annual cut (AAC) calculations.

Having more accurate biogeoclimatic mapping also simplifies field assessments for preparing Silviculture Prescriptions and Stand Management Prescriptions.

HOW TO GET COPIES OF THE MAPS

Copies of the maps can be obtained in three ways:

1. From the BC Ministry of Forests web site at http://www.for.gov.bc.ca/research/becmaps/BECMAPS.HTM. The digital products are available as a single provincial map, or as individual UTM National Topographic System (NTS) 1:250 000 Series Maps (accurate to 1:50 000).
2. From the BC Ministry of Forests FTP site at http://www.for.gov.bc.ca/ftp/Nelson_Region/!Regional_Office/external/!publish/BECmaps/. These maps are 1:250 000 (accurate to 1:50 000), by District, and include 200-m contours, water bodies, and major settlements. They are in PAMAP format. Two formats are available: one for HP650 plotters, and one for HP750 or greater plotters. The file names are:
   - <Col_bec6.plt> for the Columbia District, HP650 plotter
   - <Col_bec7.plt> for the Columbia District, HP750 plotter
   - <Arr_bec6.plt> for the Arrow District, HP650 plotter
   - <Arr_bec7.plt> for the Arrow District, HP750 plotter
3. A limited supply of hardcopy maps are available from Rick Logan, Mapping/Design Co-ordinator, Nelson Forest Region.

FUTURE MAPPING WORK

It is hoped that new maps of the remainder of the Nelson Forest Region will be completed over the next few years. Of the remaining area, the Districts where revised mapping may have the largest potential impact, in terms of NDT changes, are Kootenay Lake, and then Cranbrook.

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MacKinnon, A.; D. Meidinger; and K. Klinka. 1992. "Use of the Biogeoclimatic Classification System in British Columbia" in *Forestry Chronicle* Vol. 68 No.1:100-120.

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